

REMARKS

Review and reconsideration of this application are respectfully requested in view of the above amendments and the following discussion.

The drawing FIGS. 2 and 3 have been amended as follows: In FIG. 2, numerals 24 and 26 along with their associated lead lines have been added. In FIG. 3, numerals 24, 26, 28, 36 and 38 along with their associated lead lines have been added. The numerals are discussed in the specification and no new matter is added by the amendments to the FIGS.

Claims 2, 9, 12 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In view of the amendment to claim 2 and the cancellation of claims 9, 12 and 13, this rejection can now be withdrawn.

Claims 1-3, 8, 9, 12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Saita et al. (U.S. Patent 5,950,757). The Examiner alleges that Saita discloses steering means which is a hydraulic power assisted steering system for use in a vehicle including a pulley powered by a crankshaft in the vehicle; a clutch operably connected to the pulley; a hydraulic pump operably connected to the clutch with the pulley and the hydraulic pump to provide hydraulic power to the system, wherein the controlling means for engaging and disengaging the clutch with the pulley and the hydraulic pump to provide hydraulic power to the system, wherein the controlling means is a hysteresis pressure switch (the Examiner states that Saita describes, at col. 3, lines 40-45 and col. 4, lines 34-44, how the pressure switch and the control unit work to engage the clutch when the pressure within the passage is below a predetermined level and to disengage the clutch when the pressure is above a predetermined level, and that such description is the very definition of pressure switch with hysteresis); a hydraulic accumulator operably

connected to the hysteresis pressure switch to insure that hydraulic power is available when the clutch is disengaged and further including a check valve operable connected to the hydraulic pump to maintain hydraulic pressure in the hydraulic accumulator when the clutch is disengaged. The Examiner further states that, with respect to feature wherein the hydraulic accumulator dampens transients in the hydraulic system such that the need for hydraulic noise reducing components are not required, such feature is an inherent characteristic of hydraulic accumulators and therefore the hydraulic of Saita dampens the transients such that noise reducing components are not required; also, an actuated control valve is provided with a closed center to maintain pressure in the hydraulic accumulator until needed .

Applicant notes that claim 11 is free from the above rejection; therefore, In view of the above amendments to the claims, particularly to claim 1, wherein the contents of claim 11 has been incorporated into independent claim 1, this rejection can be withdrawn. It is applicant's contention that the rotary actuated control valve is present in the embodiment employing the hysteresis clutch and in the embodiment employing the microprocessor pressure switch, as shown in both FIGS. 2 and 3. Furthermore, in the present invention, the hydraulic accumulator is operably connected to the control means whether it is the hysteresis pressure switch or the pressure sensor. These are direct connections between the hydraulic accumulator and the control means which, in the first embodiment, is a hysteresis pressure switch and, in the second embodiment, a pressure sensor which is used as an input along with other inputs such as steering wheel rotation, vehicle speed, etc. to a microprocessor. Saita et al., on the other hand, provides a hydraulic accumulator connected to the working fluid passage. Therefore, it is requested that this rejection be withdrawn.

In summary, applicant submits that the present invention is an improvement in automotive power steering systems wherein energy is conserved by eliminating when no power assist is required Therefore, it is requested that this rejection be withdrawn.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saita et al.

in view of Gage et al. (U.S. Patent 4,303,089). The Examiner alleges that Saita et al. discloses all of applicant's claimed invention except that the vehicle ignition control system is connected to an electrical power source that is the vehicle ignition control system. Gage et al. disclose that it is well known to connect a pressure switch to a source of electrical power that is the vehicle ignition control system in order to supply energy to actuate the pressure switch when required.

It is believed that, in view of the above amendments wherein the limitations of dependent claims 3, 8, 9, 10, 11, 12 and 13 have now been incorporated into independent claim 1, the present invention as defined by amended claim 1 is not considered to be obvious over Saita et al. in view of Gage et al.

Claims 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saita et al. in view of applicant's alleged admitted prior art. The Examiner alleges that Saita et al. disclose a system which includes an actuated control valve and a power steering cylinder operably connected to the actuated control valve and to a steering rack(an inherently obvious feature on all power steering systems of the type described in Saita et al.) To provide power assist steering to the vehicle. The Examiner states that Saita et al do not specifically disclose that the actuated control valve is a rotary actuated type proportional control valve, but that applicant's admitted prior art discloses that it is well known to use rotary actuated type proportional control valve connected to the reservoir of a hydraulic power steering system (Applicant's prior art Figure 1) in order to permit the flow of fluid and thereby turning of the wheels in response to the operator's input at the steering wheel by the complex valve mechanism. Therefore, the Examiner states that it would have been obvious to one skilled in the art at the time of the invention to provide a rotary actuated proportional control valve on the Saita et al. device in order to permit the flow of fluid and thereby turning of the wheels in response to the operator's input at the steering wheel by the complex valve mechanism.

In view of the above amendments wherein the limitations of dependent claims 3, 8, 9, 10, 11, 12 and 13 have now been incorporated into independent claim 1, the present invention as

defined by amended claim 1 is not considered to be obvious over Saita et al. in view of Gage et al. Therefore, it is requested that this rejection be withdrawn.

Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Saita et al. in view of applicant's admitted prior art. The Examiner alleges that Saita et al. disclose steering means which is a hydraulic power assisted steering system for use in a vehicle including a pulley powered by a crankshaft in the vehicle; a clutch operably connected to the pulley; a hydraulic pump operably connected to the clutch; a hysteresis pressure switch (the Examiner states that Saita describes, at col. 3, lines 40-45 and col. 4, lines 34-44, how the pressure switch and the control unit work to engage the clutch when the pressure within the passage is below a predetermined level and to disengage the clutch when the pressure is above a predetermined level, and that such description is the very definition of pressure switch with hysteresis); a hydraulic accumulator operably connected to the hysteresis pressure switch to insure that hydraulic power is available when the clutch is disengaged; a check valve operably connected to the hydraulic pump to maintain hydraulic pressure in the hydraulic accumulator when the clutch is disengaged; reservoir containing hydraulic fluid, the reservoir being operably connected to the power steering pump; an actuated control valve operably connected to the reservoir and to the check valve; and a power assist steering cylinder operably connected to the actuated control valve and to a steering rack (an inherent obvious feature on all power steering systems of the type described in Saita et al.) To provide power assist steering to the vehicle, wherein the actuated control valve is provided with a closed center to maintain pressure in the hydraulic accumulator until needed and wherein the reservoir has a hydraulic fluid capacity equal to the difference between the maximum charged amount of hydraulic fluid and the minimum discharged amount of hydraulic fluid in the accumulator. The Examiner states that applicant's admitted prior art (FIG. 1) disclose that it is well known to use a rotary actuated type control valve connected to the reservoir of a hydraulic power steering system in order to permit the flow of fluid and thereby turning of the wheels in response to the operator's input at the steering wheel by the complex valve mechanism. The Examiner asserts that it would therefore be obvious to one of ordinary skill in the art at the time of the invention to provide a rotary actuated control valve on the Saita

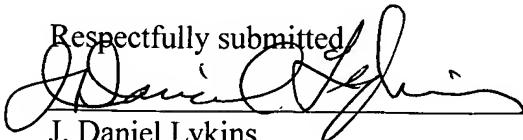
et al. device in order to permit the flow of fluid and thereby turning of the wheels in response to the operator's input at the steering wheel by the complex valve mechanism.

~~Applicant contends that, in the present invention, the hydraulic accumulator is operably connected to the control means whether it is the hysteresis pressure switch or the pressure sensor. These are direct connections between the hydraulic accumulator and the control means which, in the first embodiment, is a hysteresis pressure switch and, in the second embodiment, a pressure sensor which is used as an input along with other inputs such as steering wheel rotation, vehicle speed, etc. to a microprocessor. In fact, applicant the controlling means may, in an alternate configuration, may be integrated directly into the hydraulic accumulator. Saita et al., on the other hand, provides a hydraulic accumulator connected to the working fluid passage. Therefore, it is requested that this rejection be withdrawn.~~

In summary, applicant submits that the present invention is neither anticipated nor obvious over the prior art. In addition, the present invention represents a significant improvement in automotive power steering systems, wherein energy is conserved by eliminating the consumption of non-productive energy when no power assist to the automotive vehicle is required, such as when the vehicle is idling and not engaged in actual driving and/or steering situations. In addition to conserving energy, the present invention reduces load on the motor starter and also eliminates the need for noise-reducing components.

In view of the foregoing amendments and discussion, it is believed that the present application is now in condition for allowance and an early indication of such is earnestly solicited.

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Respectfully submitted,

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